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Comment Filed by: Theodora Scarato LCSW-C

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Background:
I am currently a social worker at Thrive Center for ADHD in Columbia Maryland. I have worked in the mental health field since 1996 in both public school and private clinic settings with clients whose ages ranged from five to 50 years old. I have extensive experience working with the ADHD population as well as clients with mood and anxiety disorders. I have extensively researched radio frequency issues related to sleep, working memory and learning as it relates specifically to my population.

Concerns:

1. Significant research indicates that radio frequency fields at non thermal levels impact sleep. In Pulsed radio-frequency electromagnetic fields: dose-dependent effects on sleep, the sleep EEG and cognitive performance, (Regel SJ 2007), researchers found a dose-response relationship between EMF field intensity and changes in the sleep EEG and in cognitive performance. In Sleep after mobile phone exposure in subjects with mobile phone-related symptoms (Lowden, A 2011) researchers found RF exposure before sleep increased the EEG alpha range in the sleep EEG, and indicated moderate impairment of Slow wave sleep. Multiple studies show RF EMF-induced effects on EEG spectral power during sleep (Borbély et al., 1999; Huber et al., 2000, 2002; Loughran et al., 2005; Regel et al., 2007b). In the Effects of 884MHz GSM Wireless Communication Signals on Self-reported Symptoms and Sleep | An Experimental Provocation Study researchers founds that following radiofrequency exposure study participants took an average of about six minutes longer to reach the deep stage of sleep than when they had received the sham exposure and spent an average eight minutes less time in the deepest â??stage fourâ? sleep (Arnetz 2007).

As a clinician, restorative sleep is one of the key factors in my clients progress. Lack of sleep or lack of deep sleep significantly impacts people in terms of their ability to maintain attention and concentration at work. Insufficient sleep in children and teens has been shown to cause difficulties in school, including disciplinary problems, sleepiness in class and poor concentration. Anything that disrupts sleep can have profound impacts on daily life functioning.

2. Research indicates that radio frequency impacts and damages neurons at critical developmental stages. Significant research on rats shows that prenatal and postnatal exposure to 900MHz EMF fields effects nerve cell development in the hippocampus and cerebellum.(Bas 2009a and Bas 2009 b, Sonmez 2010, Odaci 2008). Such effects could result in impaired memory and learning. Yale University recently published research showing the first experiential evidence of neuropathology due to in utero cellular telephone radiation (Aldad 2012). They exposed pregnant mice to cell phone radiation and found the offspring were hyperactive with impaired memory. If this impact is applicable to humans the potential impact is of serious concern.

3. Cell phone electromagnetic frequencies at non thermal levels can alter brain activity. For example, a US study published in The Journal of the American Medical Association in February 2011 showed that whole-brain glucose metabolism which is a marker of brain activity, significantly increases in areas closest to the cell phone antenna (Volkow, 2011). In another study conducted by Mr. Michael Klieeisen in the Neuro Diagnostic Research Institute in Spain, mobile phone radiation altered the natural electrical activity in the brains of teenage children and the brain waves remained abnormal for up to an hour after a 2-minute phone call.

Significant research on small mammals shows impacts on brain activity. For example, in Nonlinear changes in brain electrical activity due to cell phone radiation, rabbits were exposed to the radiation from a standard cellular telephone (800 MHz band, 600 mW maximum radiated power) under conditions that simulated normal human use and the EEG was significantly affected. (Marino 2003).

4. Cell phone radiation at non thermal levels damages sperm and impacts the male reproductive system. Several studies indicate that exposure to cell phone radiation may lead to decreases in sperm count, sperm motility and vitality, as well as increases in indicators of sperm damage such as higher levels of reactive oxygen species , oxidative stress, DNA damage and changes in sperm morphology (Agarwal 2008, Agarwal 2009, De Iuliis 2009,Erogul2006, Gutschi 2011, Falzone 2011). A recent study of sperm exposed to computer laptop radiation resulted in significantly decreased sperm motility and increased DNA fragmentation (Avendaño 2012). Laboratory studies on the effects of cell phone radiation on rats, rabbits and other animals have found similar effects on reproductive health (Kesari 2011; Mailankot 2009).

5. Cell phone radiation increases oxidative stress. Oxidative stress is a process that damages all aspects of a human cell, including itâ??s DNA through the development of toxic peroxide and free radicals and is considered a major risk factor for cancer. Dr. Yaniv Hamzany of Tel Aviv University's Sackler Faculty of Medicine and the Otolaryngology Head and Neck Surgery Department recently

published research showing significant oxidative stress on the tissue and glands which are close to the cell phone when in use in human test subjects. The heavy cell phone users had a significant increase in all salivary oxidative stress measurements studied (Hamzany 2013). This research is in parallel to accumulating research on small mammals that has shown oxidative stress as a result of cell phone radiation exposure. For example, in Melatonin Reduces Oxidative Stress Induced by Chronic Exposure of Microwave Radiation from Mobile Phones in Rat Brain researchers demonstrated that mobile phones caused oxidative damage in rat brains biochemically by increasing the levels of MDA, carbonyl groups and XO activity and decreased CAT activity (Sokolovic 2008).

6. Radiofrequency electromagnetic fields can have genotoxic effects. In a 2008 review 101 publications were reviewed that studied genotoxicity of radiofrequency electromagnetic fields in vivo and in vitro. Of these, 49 report a genotoxic effect and 42 do not. In addition, 8 studies failed to detect an influence on the genetic material, but showed that RF-EMF enhanced the genotoxic action of other chemical or physical agents. The study authors state, â??there is ample evidence that RF-EMF can alter the genetic material of exposed cells in vivo and in vitro and in more than one way. This genotoxic action may be mediated by microthermal effects in cellular structures, formation of free radicals, or an interaction with DNA-repair mechanismsâ? (Ruedige, 2009).

7. The non-thermal biological effects of EMF exposure are documented and of increasing concern to clinicians such as myself. The non thermal effects from mobile phones on the central nervous system include permeability of the bloodâ??brain barrier (BBB), neuronal electrical activity and increase in calcium ion efflux, neurotransmitter balance, cognitive function, and sleep. Electromagnetic fields have been shown to have have adverse effects on animal tissue . (Dutta et al., 1989; Odaci et al., 2008; Bas et al., 2009a,b; Ragbetli et al., 2010, 2009; Ammani et al., 2010; Maskey et al., 2010). Several studies indicate that EMFs emitted by mobile phones could affect body tissue, systems and their physiologic activities (Mausset et al., 2001; Mausset-Bonnefont et al., 2004; Salford et al., 2003; Koyu et al., 2005; Yildiz et al., 2006; Manikonda et al., 2007).

8. Scientist and Doctors around the world are cautioning that radio frequency could be a carcinogen after long term exposure . Recent published papers find that brain tumor risk is significantly elevated among those who used mobile phones for at least a decade with a greater risk among those who started using mobile phones before the age of 20. (Davis 2013). In 2011, the International Agency for Research on Cancer of the World Health Organization (WHO) declared electromagnetic radiation from mobile phone and other wireless devices a â??possible human carcinogen," (Group 2B) due to increased glioma in the highest cumulative users over ten years (WHO 2011).

In January, the European Environment Agency issued a 750-page report Late Lessons from Early Warnings with a chapter addressing the mobile phone radiation research and issuing specific recommendations (EEA 2013). Many Scientists are calling for a precautionary approach in light of

the current body of research. . The BioInitiative report, which comes out of the University at Albany, Rensselaer, New York, claims that health risks from electromagnetic fields (EMFs) generated by wireless technologies have substantially increased since 2007. The report warns that cell phone users, pregnant women and young children are at particular risk.

9. Specific Comments on the FCC's Notice of Inquiry

A. In its Notice of Inquiry the FCC asks: â??..whether its current limits are appropriate as they relate to device use by children." (p.2, Item 53).

No. The Answer is NO. Current exposure limits are not appropriate as they relate to devices used by children. Children have special vulnerabilities to environmental insults at critical stages in their development. Significant research as documented in this comment shows that electromagnetic radiation from wireless devices could have an impact on the developing brain. Children have smaller heads with a shorter distance to brain centers. Their skulls and ears are thinner allowing radiation to penetrate further. Their bodies and brain contain more fluid and therefore are more conductive. As environmental insults can impact human development at critical periods between conception and adulthood, even small exposures can have profound effects on fetal and childhood development.

Compared with adults, research on children shows that microwave radiation is absorbed twice as much into their brain, up to triple in their brain's hippocampus and hypothalamus and up to ten times as much into the bone marrow of skull. This radiation permeates childrenâ??s brains deeper then adult brains (Gandhi1996, Ghandi 2002, Kang 2002, Koulouridis 2005). Limits set by the government should take a precautionary stance towards children and pregnant women considering their possible increased vulnerability to radio frequency fields.

Current limits do not take into account the multiple devices in a persons home and work that expose people to these radio frequency fields. For example a typical adolescent may have the following situation: 1. a cell phone they keep in their pants pocket or bra and that is in use for over 60 minutes a day 2. a wireless router that is sometimes located in their bedroom near their head or perhaps near their computer they work on for hours a day doing homework 3. a wifi laptop they use for hours at school 3. a wireless game console they play on at night 4 a DECT cordless phone they use and a 24 hour emitting DECT phone base that may be located on their bed nightstand. Adults have similar exposures at home and work. Many adults are in jobs where the cell phone is in use for most of the day as is the case for realtors or construction contractors.

In the home many families use microwave ovens for several minutes a day constituting significant minutes of exposure at non thermal levels. These ovens always have a degree of low level pulsed

microwave radiation leakage from the appliance. However, these levels are often as high as is emitted from cell phones and radiate throughout room for more than ten feet for the duration of the cooking time. In addition, some people have occupations in food establishments where they are working for hours in front of a microwave oven receiving these low level exposures.

Increasingly, children are given personal cell phones that they use after school to communicate with their parents. A younger child may not own a cell phone but their parents will give them the cell phone to play with at various points throughout the day. Even our youngest children are given WIFI IPADS to play games on. Many elementary aged children will be in schools using wireless devices as part of the educational curriculum. Wireless access points are also a source of exposure at schools and at this time, their location could be anywhere in relation to children sitting at their desks. This exposure is present for every minute they are in school, even when they are not using their wireless devices.

I have sat in on school classes where children are in small groups sitting crosslegged on the floor with IPADS on their laps. The IPADS are in direct contact with their body and with radio frequency exposure directly over their reproductive organs. I have sat in on classes with children using wifi enabled laptops on desks and laps (using gdocs which connects to the internet every few seconds) and each childâ??s head is inches from not only their laptop but the laptops from students inches away at every angle.

Lets say that twenty children are in a room using wireless devices, then children are getting the pulsed radio frequency exposure from the access point, the current device they are using and also the devices in use around them.

In addition, many schools have contracts with wireless companies to have cell towers on their property and so children are exposed to increased radio frequency radiation from these towers both in their classrooms and also outside on the fields during recess and sport events.

Furthermore, teenagers often have metal dental appliances in their mouths- braces and retainers. This metal can impact the intensity and specifics of their exposure. The mouth is in close proximity to the brain.

Current exposure limits currently do not account for these multiple sources of low level exposures. Exposure limits must take into account the hours of exposure that people may have over the course of the day with multiple devices.

B. On p.4, Item 63 of the Inquiry the Commission requests comment on "whether the Commission should consistently require either disclosure of the maximum SAR value or other more reliable exposure data in a standard format, perhaps in manuals, at point-ofsale, or on a Web site.â?

The answer is YES. Consumers should know these details for all the devices they buy. This information should be provided at point of sale, on the manufacturers website and in the manuals.

Furthermore, information on how far to locate this device from body parts as well as how to decrease exposure should be given at the point of sale on all radio frequency emitting devices. This information should be clearly labeled on all devices in a format where consumers will see it. Currently, such information is located in fine print deep in the manuals that most consumers never read.

At this time, the public is not well informed on how to use their devices in a way that stays within even current FCC exposure limits. People typically press their cell phones to their head to have conversations and store their cell phones in a location against their body near reproductive organs. Of special concern is how pregnant women store their phones in their pants pocket directly over their developing fetus. They also rest their phones on their bellies as they scroll through emails or texts. Many pregnant women use their bellies to prop up their laptops while reclining in bed. Many parents carry their infants in front carriers that have a small pocket where they put their cell phone. The cell phone is then resting directly over the infants heart with only a sheet of cotton separating their bodies from the phone.

These uses may violate even the current FCC exposure limits.

Information on how to take precautions with this radiation is needed. Exposure data at point of sale is critical to educating the public on their real life exposure and to support them in using their devices safely and within recommended limits.

C. In the introduction to FCC 13-39 Section 5 Inquiry, the FCC asks, â??whether our exposure limits remain appropriate given the differences in the various recommendations that have developed and recognizing additional progress in research subsequent to the adoption of our existing exposure limits.â?

The answer is NO. Our exposure limits are not appropriate given the significant accumulating research showing serious biological health effects from radio frequency radiation at low levels. The exposure limits should protect adults children and the developing fetus from non thermal biological health effects due to long term everyday exposure considering the current proliferation of wireless devices in everyday life. Existing exposure limits are outdated. They do not account for the cumulative effect of the current use of multiple RF emitting devices in the home, work and school settings. They do not protect humans from adverse health effects from non thermal low levels. They do not protect more sensitive vulnerable populations such as children and the developing fetus.

Exposure limits must address all of these parameters in order to protect public health.

Respectfully submitted by Theodora Scarato LCSW-C

Aldad, T., et. al. (2012). Fetal Radiofrequency Radiation Exposure From 800-1900 Mhz-Rated Cellular Telephones Affects Neurodevelopment and Behavior in Mice. Scientific Reports, 2. Retrieved December 13, 2012, from http://www.nature.com/srep/2012/120315/srep00312/full/srep00312.html

Agarwal A, Deepinder F, Sharma RK, Ranga G, Li J. 2008. Effect of cell phone usage on semen analysis in men attending infertility clinic: an observational study. Fertil Steril 89(1): 124-8.

Agarwal A, Desai NR, Makker K, Varghese A, Mouradi R, Sabanegh E, et al. 2009. Effects of radiofrequency electromagnetic waves (RF-EMW) from cellular phones on human ejaculated semen: an in vitro pilot study. Fertil Steril 92(4): 1318-25.

Avendaño C, Mata A, Sanchez Sarmiento CA, Doncel GF. Use of laptop computers connected to internet through Wi-Fi decreases human sperm motility and increases sperm DNA fragmentation. Fertil Steril. 2012;97:39â??45.

Arnetz B, Akerstedt T, Hillert L, et al. The Effects of 884MHz GSM Wireless Communication Signals on Self-reported Symptoms and Sleep | An Experimental Provocation Study. PIERS Online 2007 3: 1148-1150

Bawin, S. M., Gavalas-Medici, R. J. and Adey, W. R. Effects of modulated very high frequency fields on specific brain rhythms in cats. Brain Res., 1973, 58: 365â??384.

Bas, O., Odaci, E., Mollaoglu, H., Ucok, K., Kaplan, S., 2009a. Chronic prenatal exposure to the 900 megahertz electromagnetic field induces pyramidal cell loss in the hippocampus of newborn rats. Toxicol. Ind. Health 25, 377â??384.

Borbély, A. A., Huber, R., Graf, T., Fuchs, B., Gallmann, E. and Achermann, P. Pulsed high-frequency electromagnetic field affects human sleep and sleep electroencephalogram. Neurosci. Lett., 1999, 275: 207â??210.

Boutry, C. M., Kuehn, S., Achermann, P., Romann, A., Keshvari, J. and Kuster, N. Dosimetric

evaluation and comparison of different RF exposure apparatuses used in human volunteer studies. Bioelectromagnetics, 2008, 29: 11â??19.

Croft, R. J., Chandler, J. S., Burgess, A. P., Barry, R. J., Williams, J. D. and Clarke, A. R. Acute mobile phone operation affects neural function in humans. Clin. Neurophysiol., 2002, 113: 1623â??1632.

Croft, R. J., Hamblin, D. L., Spong, J., Wood, A. W., Mckenzie, R. J. and Stough, C. The effect of mobile phone electromagnetic fields on the alpha rhythm of human electroencephalogram. Bioelectromagnetics, 2008, 29: 1â??10.

Croft, R. J., Leung, S., Mckenzie, R. J. et al. Effects of 2G and 3G mobile phones on human alpha rhythms: resting EEG in adolescents, young adults, and the elderly. Bioelectromagnetics, 2010, 31: 434â??444.

Curcio, G., Ferrara, M., Moroni, F., Dâ??inzeo, G., Bertini, M. and De Gennaro, L. Is the brain influenced by a phone call? An EEG study of resting wakefulness Neurosci. Res., 2005, 53: 265â??270.

Davis DL, Kesari S, Soskolne CL, Miller AB, Stein Y. Swedish review strengthens grounds for concluding that radiation from cellular and cordless phones is a probable human carcinogen. Pathophysiology. 2013 May 7.

De Iuliis GN, Newey RJ, King BV, Aitken RJ. 2009. Mobile phone radiation induces reactive oxygen species production and DNA damage in human spermatozoa in vitro. PLoS One 4(7): e6446.

Erogul O, Oztas E, Yildirim I, Kir T, Aydur E, Komesli G, et al. 2006. Effects of electromagnetic radiation from a cellular phone on human sperm motility: an in vitro study. Arch Med Res 37(7): 840-3.

European Environment Agency , Late lessons from early warnings: science, precaution, innovation, EEA Report No 1/2013

Falzone N, Huyser C, Becker P, Leszczynski D, Franken DR. 2011. The effect of pulsed 900-MHz GSM mobile phone radiation on the acrosome reaction, head morphometry and zona binding of human spermatozoa. Int J Androl 34(1): 20-6.

Feinberg, I. and Floyd, T. C. Systematic trends across the night in human sleep cycles. Psychophysiology, 1979, 16: 283â??291.

Ferreri, F., Curcio, G., Pasqualetti, P., De Gennaro, L., Fini, R. and Rossini, P. M. Mobile phone emissions and human brain excitability. Ann. Neurol., 2006, 60: 188â??196.

Fritzer, G., Goder, R., Friege, L. et al. Effects of short- and long-term pulsed radiofrequency electromagnetic fields on night sleep and cognitive functions in healthy subjects. Bioelectromagnetics, 2007, 28: 316â??325.

Gutschi T, Mohamad Al-Ali B, Shamloul R, Pummer K, Trummer H. 2011. Impact of cell phone use on men's semen parameters. Andrologia 43(5): 312-6.

Yaniv Hamzany, Raphael Feinmesser, Thomas Shpitzer, Aviram Mizrachi, Ohad Hilly, Roy Hod, Gideon Bahar, Irina Otradnov, Moshe Gavish, Rafael M. Nagler. Is Human Saliva an Indicator of the Adverse Health Effects of Using Mobile Phones? Antioxidants & Redox Signaling, 2013; 18 (6): 622 DOI: 10.1089/ars.2012.4751

Huber, R., Graf, T., Cote, K. A. et al. Exposure to pulsed high-frequency electromagnetic field during waking affects human sleep EEG. Neuroreport, 2000, 11: 3321â??3325.

Huber, R., Treyer, V., Borbély, A. A. et al. Electromagnetic fields, such as those from mobile phones, alter regional cerebral blood flow and sleep and waking EEG. J. Sleep Res., 2002, 11: 289â??295.

Huber, R., Schuderer, J., Graf, T. et al. Radio frequency electromagnetic field exposure in humans: estimation of SAR distribution in the brain, effects on sleep and heart rate. Bioelectromagnetics, 2003, 24: 262â??276.

Huber, R., Treyer, V., Schuderer, J. et al. Exposure to pulse-modulated radio frequency electromagnetic fields affects regional cerebral blood flow. Eur. J. Neurosci., 2005, 21: 1000â??1006.

International Commission on Non-Ionizing Radiation Protection. Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz). Health Phys., 1998, 74: 494â??522.

Kesari KK, Kumar S, Behari J. 2011. Effects of radiofrequency electromagnetic wave exposure from cellular phones on the reproductive pattern in male wistar rats. Appl Biochem Biotechnol 164(4): 546-59.

G. Kang, O.P. Gandhi. SARs for pocket-mounted mobile telephones at 835 and 1900 MHz. Phys Med Biol. 47(23) (2002) 4301-13

S. Koulouridis, M. Christopoulou, K.S. Nikita. Comparative Assessment of Power Absorption in Heads of Adults and Children Exposed to the Radiation of Cellular Phones at 1800 MHz. The Environmentalist, 25 (2005) 223â??232

Koivisto, M., Krause, C. M., Revonsuo, A., Laine, M. and Hamalainen, H. The effects of electromagnetic field emitted by GSM phones on working memory. Neuroreport, 2000, 11: 1641â??1643.

Lowden, A., Åkerstedt, T., Ingre, M., Wiholm, C., Hillert, L., Kuster, N., Nilsson, J. P. and Arnetz, B. (2011), Sleep after mobile phone exposure in subjects with mobile phone-related symptoms. Bioelectromagnetics, 32: 4â??14. doi: 10.1002/bem.20609

Loughran, S. P., Wood, A. W., Barton, J. M., Croft, R. J., Thompson, B. and Stough, C. The effect of electromagnetic fields emitted by mobile phones on human sleep. Neuroreport, 2005, 16: 1973â??1976.

Loughran, S. P., Jackson, M., Howard, M. E. and Croft, R. J. Individual differences in the effects of the radiofrequency electromagnetic fields emitted by mobile phones on human sleep. In: 29th URSI General Assembly, Chicago, Illinois, USA, 2008.

Mann, K. and Röschke, J. Effects of pulsed high-frequency electromagnetic fields on human sleep. Neuropsychobiology, 1996, 33: 41â??47.

Mailankot M, Kunnath AP, Jayalekshmi H, Koduru B, Valsalan R. 2009. Radio frequency electromagnetic radiation (RF-EMR) from GSM (0.9/1.8GHz) mobile phones induces oxidative stress and reduces sperm motility in rats. Clinics (Sao Paulo) 64(6): 561-5.

AA Marino, E Nilsen, C Frilot,2003, Nonlinear changes in brain electrical activity due to cell phone radiation Bioelectromagnetics 24 (5), 339-346

Odaci, E., Bas, O., Kaplan, S., 2008. Effects of prenatal exposure to a 900 megahertz electromagnetic field
on the dentate gyrus of rats: a stereological and histopathological study. Brain Res. 1238, 224â??229.

O.P. Gandhi, G. Lazzi, C.M. Furse. Electromagnetic Absorption in the Human Head and Neck for Mobile Telephones at 835 and 1900 MHz. IEEE Trans. Microwave Theory Tech. 44 (1996) 1884â??1897

O.P. Gandhi, G. Kang. Some present problems and a proposed experimental phantom for SAR compliance testing of cellular telephones at 835 and 1900 MHz. Phys. Med. Biol. 47 (2002) 1501

Preece, A. W., Iwi, G., Davies-Smith, A. et al. Effect of a 915-MHz simulated mobile phone signal on cognitive function in man. Int. J. Radiat. Biol., 1999, 75: 447â??456.

Rechtschaffen, A. and Kales, A. Manual of Standardized Terminology, Techniques and Scoring Systems for Sleep Stages of Human Subjects. National Institutes of Health, Bethesda, Maryland, 1968.

Regel, S. J. and Achermann, P. Cognitive performance measures in bioelectromagnetic research â?? critical evaluation and recommendations. Environ. Health, 2011, 10: 10.

Regel, S. J., Gottselig, J. M., Schuderer, J. et al. Pulsed radio frequency radiation affects cognitive performance and the waking electroencephalogram. Neuroreport, 2007a, 18: 803â??807.

Regel, S. J., Tinguely, G., Schuderer, J. et al. Pulsed radio-frequency electromagnetic fields: dose-dependent effects on sleep, the sleep EEG and cognitive performance. J. Sleep Res., 2007b, 16: 253â??258.

Hugo W. Ruedige, 2009, Genotoxic effects of radiofrequency electromagnetic fields, Pathophysiology, Volume 16, Issue 2 , Pages 89-102 ,

Sack, A. T. and Linden, D. E. Combining transcranial magnetic stimulation and functional imaging in cognitive brain research: possibilities and limitations. Brain Res. Brain Res. Rev., 2003, 43: 41â??56.

Sonmez OF, Odaci E, Bas O, Kaplan S., 2010. Purkinje cell number decreases in the adult female rat cerebellum following exposure to 900 MHz electromagnetic field. Brain Res. 2010 Oct 14;1356:95-101.

Sokolovic D, Djindjic B, Nikolic J, Bjelakovic G, Pavlovic D, Kocic G, Krstic D, Cvetkovic T, Pavlovic V.J 2008 Melatonin reduces oxidative stress induced by chronic exposure of microwave radiation from mobile phones in rat brain.Radiat Res. ;49(6):579-86.

Valentini, E., Curcio, G., Moroni, F., Ferrara, M., De Gennaro, L. and Bertini, M. Neurophysiological

effects of mobile phone electromagnetic fields on humans: a comprehensive review. Bioelectromagnetics, 2007, 28: 415â??432.

Valentini, E., Ferrara, M., Presaghi, F., De Gennaro, L. and Curcio, G. Systematic review and meta-analysis of psychomotor effects of mobile phone electromagnetic fields. Occup. Environ. Med., 2010, 67: 708â??716.

Van Rongen, E., Croft, R., Juutilainen, J. et al. Effects of radiofrequency electromagnetic fields on the human nervous system. J. Toxicol. Environ. Health B Crit. Rev., 2009, 12: 572â??597.

Volkow, N., et. al. (2011). Effects of Cell Phone Radiofrequency Signal Exposure on Brain Glucose Metabolism. JAMA: The Journal of the American Medical Association, 305(8), 808-813. Retrieved August 10, 2012, from http://jama.jamanetwork.com/article.aspx?articleid=645813

Wagner, P., Röschke, J., Mann, K., Hiller, W. and Frank, C. Human sleep under the influence of pulsed radiofrequency electromagnetic fields: a polysomnographic study using standardized conditions. Bioelectromagnetics, 1998, 19: 199â??202.

Wagner, P., Röschke, J., Mann, K. et al. Human sleep EEG under the influence of pulsed radio frequency electromagnetic fields. Results from polysomnographies using submaximal high power flux densities. Neuropsychobiology, 2000, 42: 207â??212.

WHO (World Health Organization). 2011. IARC Classified Radiofrequency Electromagnetic Fields as Possibly Carcinogenic to Humans. Press Release # 208. 31 May 2011. Available: http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf